



**PARENT UNIVERSITY**  
**Unlimited Hands-On Science**  
**SEPTEMBER 2016**

**STANDARD 4.E.3:** The student will demonstrate an understanding of the locations, movements, and patterns of stars and objects in the solar system.

**“INTRO TO SPACE”**

- I. *Intro (Rules)*
- II. *Life Cycle of a Star (Hands-On)*
  - A. *What is a star*
  - B. *Its similarities to the life cycle of a human*
- III. *Craters (Hands-On)*
  - A. *How they are formed?*
  - B. *What are asteroids?*
- IV. *Galaxies (Hands-On)*
  - A. *What is a galaxy?*
  - B. *Milky Way*
- V. *Ultraviolet Light (U.V.)*
- IV. *Review (Terminology)*
  - A. *Asteroid*
  - B. *Craters*
  - C. *Galaxy*
  - D. *Ultraviolet (U.V.)*

*\*\*\*Students are encouraged to understand that Astronomy is the study of objects in our solar system and beyond.*

# Engaging Experiments for HOME

## Comets

*Activity: How to make a comet for the classroom*

### *Materials:*

- *Dry Ice*
- *Garbage Bags*
- *Hammer*
- *Gloves*
- *Ice-cream sticks*
- *Sand or Dirt*
- *Ammonia*
- *Corn syrup.*

### *Method:*

1. *Line a mixing bowl with a plastic liner.*
2. *Add sand, ammonia and corn syrup.*
3. *Place dry ice in 3 garbage bag that have been placed inside each other.*
4. *Crush Ice by pounding it with a hammer.*
5. *Add the dry ice to the rest of the ingredients in the mixing bowl while stirring vigorously.*
6. *Continue stirring until the mixture is almost totally frozen.*
7. *Lift the comet out of the bowl using the plastic liner and shape it as you would a snowball.*
8. *Unwrap the comet as soon as it is frozen sufficiently to hold its shape*

### *Tips:*

*Simulate movement of the comet through the solar system, carry the comet as you walk around a bright bulb (the sun) in a darkened room. Far from the bulb walk very slowly, and comment on the low temperature and feeble light. Closer to the bulb, describe passing Saturn and Jupiter, and near Mars warming up so the tail begins to form. Walk more quickly towards the bulb (the increasing gravitational pull between the sun and the comet causes it to move faster) swing around it, and head away tumbling the comet as you go.*

## What's happening?

The comet will start to melt turning directly from a solid to a gas (which is what carbon dioxide does at room temperature and comets do under the conditions of interplanetary space when they are heated by the sun).

For safety the children can use ice-cream sticks to examine the comet. As it begins to melt they may notice small jets of gas coming from it. These are locations where the gaseous carbon dioxide is escaping through small holes in the still frozen water. This is also detected on real comets, where the jets can sometimes expel sufficient quantities of gas to make small changes in the orbit of the comet.

After several hours the comet will become a crater-filled ice ball as the more volatile carbon dioxide sublimated before the water ice melts. Real comets are also depleted by sublimation each time they come near the Sun. Ultimately, old comets may break into several pieces or even completely disintegrate. In some cases, the comet may have a solid, rocky core that is then left to travel around the comet's orbit as a dark barren asteroid.

## **AWESOME REFERENCES**

1. [http://www.lovemyscience.com/cat\\_pressure.html](http://www.lovemyscience.com/cat_pressure.html)
2. <http://www.sciencekids.co.nz/experiments.html>
3. <http://kids.usa.gov/>
4. [Internet4classrooms.com/](http://Internet4classrooms.com/)

## **JUST A FEW BOOKS**

1. *National Geographic Kids First Big Book of Space (National Geographic Little Kids First Big Books) Hardcover – October 9, 2012 by Catherine D. Hughes (Author), David A. Aguilar (Illustrator)*
2. *The Everything Kids' Astronomy Book: Blast into outer space with stellar facts, intergalactic trivia, and out-of-this-world puzzles Paperback – May 1, 2008 by Kathi Wagner (Author), Sheryl Racine (Author)*